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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Daniel D. Christensen et al.
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For:	AN AUTOMATICALLY DOWNLOADED LINK ACTIVE SCHEDULE
Art Unit:	2112
Examiner:	Christopher E. Lee

CERTIFICATE OF SERVICE
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Dated: November 18, 2004

Roger A. Heppermann

APPEAL BRIEF

MS Appeal Brief-Patents
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Sir:

Pursuant to the Notice of Appeal filed June 18, 2004 in connection with the above-identified patent application, Applicants respectfully submit this Appeal Brief in accordance with 37 C.F.R. §1.192. This brief is being filed in triplicate (37 C.F.R. §1.192(a)) and is timely submitted as it is accompanied by a petition for a three month of extension of time and the requisite fee therefor thereby extending the response period to November 18, 2004. This brief contains the following items under the following headings and in the order set forth below (37 C.F.R. §1.192(c)):

I. REAL PARTY IN INTEREST (37 C.F.R. §1.192(c)(1))

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. §1.192(c)(2))

I. Real Party In Interest

The real party in interest is Fisher-Rosemount Systems, Inc., the assignee of the present application. An assignment assigning rights in the present application to Fisher-Rosemount Systems, Inc. was recorded on December 3, 1999 in the United States Patent and Trademark Office at Reel 010439, Frame 0914.

II. Related Appeals and Interferences

There are no related appeals or interferences.

III. Status of the Claims

Currently, claims 1-26 are pending, and are reproduced in Appendix A of this Brief.

IV. Status of the Amendments

Applicants filed no amendments to the claims in response to the final Office action dated January 7, 2004. As a result there are no outstanding amendments. Additionally, the Advisory Action of April 15, 2004 indicated that the Applicants' response has not been entered because the Applicants did not propose any amendments.

V. Summary of the Invention

Although specification citations are inserted below in accordance with C.F.R. 1.192(c), these reference numerals and citations are merely examples of where support may be found in the specification for the terms used in this section of the brief. There is no intention to suggest that the terms of the claims are limited to the examples in the specification. Although as demonstrated by the reference numerals and citations below, the claims are fully supported by the specification as required by law, it is improper under the law to read limitations from the specification into the claims. In particular, pointing out specification support for the claim terminology to comply with rule 1.192(c) does not limit the scope of the claims to those examples from which they find support, nor does this exercise provide a mechanism for circumventing the law precluding reading limitations into the claims from the specification. In short, reference numerals and specification citations are not to be construed as claims limitations or used to limit the scope of the claims.

Generally speaking, process control systems, such as those used in chemical, petroleum or other processes, typically include a controller that is communicatively coupled to one or more field devices which may be, for example, electronic sensors, actuators, transmitters, current-to-pressure transducers, valve positioners, etc located throughout a

process. The field devices generate signals responsive to process performance and operating parameters and provide those signals to the controller. The controller may be centrally located with respect to at least a portion of the field devices while the various field devices are generally physically close to the process. Alternatively, the process control system may include a microprocessor-based distributed control system (DCS) in which one or more user interface devices, such as workstations, are connected by a databus (e.g. an Ethernet bus) to one or more distributed process controllers. Each of the controllers may independently execute control algorithms to control the field devices coupled to the controllers, thereby decentralizing the control tasks and providing greater overall system flexibility. Specification, page 1, lines 7-23.

To provide for improved modularity and inter-manufacturer compatibility, process control manufacturers have more recently moved towards even further decentralization of control within a process. These more recent approaches are based on "smart" field devices that communicate on a databus using an open protocol such as the FOUNDATION® Fieldbus protocol (referred to herein as the Fieldbus protocol). These smart field devices are essentially microprocessor-based devices having the ability to perform some control functions traditionally executed by a DCS controller. Using the Fieldbus protocol, field devices from a variety of manufacturers can communicate with one another on a common digital databus or link and can interoperate to execute a control loop without the traditional DCS controller. However, the implementation of Fieldbus communications over the common digital databus requires scheduling between synchronous (i.e., scheduled) communications and asynchronous (i.e., token ring type) communications. Such scheduling defines when each device or software component within a device can communicate on the digital databus, when different components connected to the digital databus should execute,

when asynchronous communications can take place, etc. In general, in the Fieldbus protocol, the scheduled/synchronous communications are used for signals related to actual process control activities while the asynchronous communications are used to convey secondary information, for example, to and from a user or other activities not directly necessary for process control. In any event, a scheduling function is required to coordinate and synchronize the interoperation of the smart field devices and the communications over the Fieldbus databus (also referred to herein as the Fieldbus link). Specification, page 1, line 24 – page 2 line 23.

The communication scheduling and control function in the Fieldbus protocol is performed by a link active scheduler (LAS) which is a designated device connected to the Fieldbus link. Each Fieldbus link includes at least one LAS device that acts as a master LAS which stores and uses a link active schedule that defines the times at which each of the devices or elements on the Fieldbus link are able to perform synchronous communications, when asysnchronous communications can occur on the Fieldbus link, etc. For redundancy purposes, however, each Fieldbus link may also include one or more backup LAS devices which are capable of receiving and storing the link active schedule and of using this link active schedule to operate as the active or master LAS device when the designated master LAS device fails or becomes disabled. In particular, a backup LAS device acts as a redundant LAS device on the Fieldbus link and automatically becomes active (i.e., becomes the master LAS) when the master LAS fails, to thereby assure continued operation of communications on the Fieldbus link upon failure of the master LAS. Specification, page 2, line 19 – page 3, line 2. Without such redundancy, failure of the LAS device would result in failure of all communications on the Fieldbus link which, in turn, would result in

uncoordinated operation of and potential failure of all of the field devices connected to the Fieldbus link.

As indicated above, the LAS device (whether it be a master LAS device or a backup LAS device) needs a link active schedule to be a able to properly control the communications on the Fieldbus link. Presently, when a user makes changes to a process control system and, in particular, to the Fieldbus link by adding a new device onto the Fieldbus link, by removing a device from the Fieldbus link or by adding or removing functionality from a device on the Fieldbus link, the user needs to additionally create a new link active schedule to be used by the master LAS device to assure that the new devices or functional elements are able to communicate on the Fieldbus link. As is known, the user downloads the new link active schedule to the master LAS device, which then uses the new link active schedule to perform communications on the Fieldbus link.

However, to assure proper backup operation in the prior art, the user must also separately download the new link active schedule to each of the backup LAS devices on the Fieldbus link. Thus, to assure proper backup operation by the backup LAS devices, the user must know and keep track of each of the devices on the Fieldbus link that are operating as a backup LAS device on that link and must remember to download the new link active schedule to each of the backup LAS devices when downloading the new link active schedule to the master LAS device. Unfortunately, in prior art systems, if the user forgets to download the new link active schedule to each of the backup LAS devices, the master LAS device will still operate with the new link active schedule and, thus, communications will occur properly on the Fieldbus link until the master LAS device fails. However, contrary to the desired operation, the failure of the master LAS (with the new link active schedule) after the user has forgotten to download the link active schedule to all of the backup LAS devices (or has

simply missed one) typically results in the failure of the process control loops operating on the Fieldbus link because the backup LAS, when it takes over control of communications on the Fieldbus link, will try to operate with an old version of the link active schedule (that is, using a different link active schedule than was being used by the master LAS when the master LAS device failed). Specification, page 3, lines 3-13. This situation quickly leads to the failure of or uncoordinated operation of one or more of the devices on the Fieldbus link which can be very dangerous as it may lead to a catastrophic failure of the process.

The claimed invention operates to assure that proper backup LAS device operation occurs even when the user forgets to download a new link active schedule to each of the backup LAS device when the user downloads such a new link active schedule the master LAS device operating on the protocol bus, e.g., the Fieldbus link. More particularly, the claimed invention automatically assures that any new link active schedule that is sent to the master LAS device on a protocol bus is automatically sent to each of the backup LAS devices on the protocol bus without requiring the user to send the new link active schedule to each of the backup LAS devices and without requiring the user to specify which devices on the protocol bus are backup LAS devices.

More particularly, the claimed system and method operate in a system that includes a controller device and other devices connected to a databus (such as the Fieldbus link) and in which the controller, which can be any device on the link, sends process control related signals over the link (as distinguished from pure communication control signals). When a user sends a new link active schedule to a master LAS device on the databus, the recited system and method automatically transmits the link active schedule from the master link active scheduler over the databus to one or more backup link active schedulers upon receipt of the link active schedule in the master link active scheduler, and performs this action apart

from the process control signals sent on the databus. The claimed system and method then stores the link active schedule in the backup LAS devices to thereby assure that each of the backup LAS devices on a databus are updated with the same link active schedule sent to the master LAS device. This automatic sending of a new link active schedule from the master LAS at which the schedule is received to each of the backup LAS devices assures that the transfer of control between a master LAS device and a backup LAS device occurs without failure after a user has updated or changed the link active schedule being using by the master LAS device.

As an example, Figure 5 illustrates a block diagram of the master 120 and backup 122 LAS devices on a Fieldbus link 124, wherein the master LAS device 120 is capable of automatically downloading the most current link active schedule to each backup LAS device 122 via a protocol databus 124. The master LAS 120, which may be, for example, one of the I/O devices 28 or 30 of Figure 1, includes a backup list 126 (which stores a list of the backup LAS devices on the bus 124), a link active schedule 128 for the bus 124, and downloading software 130, all stored in one or more memory devices within the master LAS 120. The master LAS 120 also includes a microprocessor 132 that executes control algorithms and that enables the communication of information to and from the master LAS 120 via the databus 124. Specification, page 17, lines 20-29.

The backup LAS 122, which may be, for example, the device 32 of Figure 1, includes a link active schedule 128, software 134, and a microprocessor 132 that are similar to or identical to those contained within the master LAS 120 described above. In operation, the master LAS 120 initially receives the backup list 126 and the schedule 128 via the databus 124, or from some other external source, in response to a user command to download and store the backup list 126 and the schedule 128 in the master LAS 120. According to the

present invention, after receiving a new version of the link active schedule 128, the downloading software 130 in the master LAS device 120 automatically sends the recently received link active schedule to each of the devices listed in the backup list 126 to thereby automatically update those backup LAS devices with the new link active schedule. This operation eliminates any requirement that the user to remember which backup LAS devices to update with the new link active schedule information. Specification, page 18, lines 1-10.

Additionally, the software 130 may use a live list feature (which is a list that is updated constantly by the master LAS device indicating all of the devices that are currently communicating or able to communicate on the databus) to recognize when a backup LAS device (indicated as a backup LAS device in the backup list 126) is no longer communicating on the bus and, as a result, is no longer available for backup purposes. For example, the software 130 may periodically compare the live list to the backup list to determine if any backup LAS devices have dropped off the bus 124 and are, therefore, no longer available as backup LAS devices should the master LAS fail. If the master LAS 120 recognizes that a backup device from the backup list 126 is no longer on the live list (i.e., is not available for backup), the master LAS 120 may send a message communicating this fact to the user via the databus 124 or any other communication line. Additionally, if one or more of the link active schedules stored in the backup devices 32, 38, 42 cannot be loaded, then the user may be notified as above via the databus 22 and the user interfaces 12, 14. Specification, page 18, lines 15-26.

In view of the foregoing description, it can be appreciated that because the master LAS 120 automatically updates the backup LAS 122 with the most current version of the link active schedule, the reliability of a process control loop is greatly improved. In particular, a user is only required to download the link active schedule once to the master LAS 120, and

does not have to remember to update each of the backup LAS devices 122 with the new schedule. As a result, the present invention assures that the backup LAS 122 will have a current link active schedule, and in the event that the master LAS 120 fails, the backup LAS 122 takes control of the bus 124 to properly control communications on the bus. Specification, page 19, lines 9-18.

VI. Issues

The issues presented on appeal are:

1) Whether claims 1, 5-10, 14-19, 25 and 26 are patentable under 35 U.S.C. § 103(a) over any combination of two or more of Applicant Admitted Prior Art ("AAPA"), Burns et al., WO 98/14853 ("Burns"), and Pentikäinen, U.S. Patent No. 6,445,905 ("Pentikäinen").

2) Whether claims 2, 11, 12, and 20 are patentable under 35 U.S.C. § 103(a) over the combination of either of AAPA or Burns in combination with both of Pentikäinen and Chrabaszcz, U.S. Patent No. 6,263,387 ("Chrabaszcz").

3) Whether claims 3, 4, 13, and 21-24 are patentable under 35 U.S.C. § 103(a) over any combination of AAPA, Pentikäinen, Burns, and Shapiro et al., U.S. Patent No. 6,230,286 ("Shapiro").

VII. Grouping of Claims

Group I: Claims 1, 5-10, 14-19, 25 and 26. The claims of Group I stand or fall together.

Group II: Claims 2, 11, 12, and 20. The claims of Group II stand or fall together.

Group III: Claims 3, 4, 13, and 21-24. The claims of Group III stand or fall together.

The claims of Groups I , II and III stand or fall separately.

VIII. Argument

A. The Claims of Group I Are Patentable Over Any Combination of the AAPA, Burns, and Pentikäinen References

Group I includes claims 1, 5-10, 14-19, 25 and 26 of which, claims 1, 10, 17, and 19 are independent. Each of the independent claims recites a system or a method for use in a process control system having a controller for providing process control signals, a master link active scheduler (LAS) (also called a primary scheduler or a routine) which operates to control the communications on a databus according to a link active schedule (also called a communication timing schedule), and a backup LAS, the system and method providing a new link active schedule to the backup LAS by automatically sending the new link active schedule from the master LAS to the backup LAS via the databus upon receipt of the new link active schedule by the master LAS.

None of the AAPA, Burns, and Pentikäinen references discloses, teaches or suggests sending a link active schedule from a master LAS device to a backup LAS device, much less doing so automatically upon receipt of the link active schedule at the master LAS device, as is recited by each of independent claims 1, 10, 17, and 19.

While AAPA and Burns disclose the use of a master LAS device and a backup LAS device on a Fieldbus link, as noted by the Examiner, AAPA and Burns do not disclose or suggest sending link active schedules between different LAS devices, much less providing a new link active schedule to a backup LAS device by automatically sending the new link active schedule from the master LAS device to the backup LAS device upon receipt of the new link active schedule at the master LAS device. Instead, as described above with respect to the known prior art, both AAPA and Burns require a user to manually send any new link active schedule to each of the backup LAS devices. Additionally, in these systems, the user must send the new link active schedule directly to the backup LAS devices from the same device that the user uses to send the new link active schedule to the master LAS device. As a result, in these systems, the user sends the new link active schedule to the backup LAS devices from a host or workstation device, not from a master LAS device.

Therefore, similar to the prior art discussed above, in each of the AAPA and the Burns systems, if the user forgets to send a new link active schedule to each backup LAS device on the Fieldbus link when the user sends the new link active schedule to the master LAS device, the process control system may fail upon switch-over from the master LAS device (with the new link active schedule) to a backup LAS device because the backup LAS device will not use the same communication timing schedule that was being used by the master LAS device to control communications on the bus. Neither Burns nor AAPA recognizes that a problem exists when a user forgets to send a new link active schedule to each of the backup LAS devices on a Fieldbus link. Thus, both AAPA and Burns fail to provide any suggestion that it might be possible or even desirable to send link active schedule information from one LAS device to another LAS device, much less doing so automatically

from the master LAS device to one or more backup LAS devices upon receipt of that schedule information at the master LAS.

In a similar manner, Pentikäinen fails to provide any disclosure or suggestion that it may be desirable or even possible to send a link active schedule, or any other schedule used to control the timing of communications on a bus, from a first device that controls the communications on the bus (the master LAS device) to a second device that operates as a redundant device to control communications on the bus (the backup LAS device). Instead, Pentikäinen discloses a set of interconnected databases within a telecommunications system and, more particularly, a telecommunications system in which group or subscriber data indicative of user or subscriber information is sent (presumably at regularly scheduled times) from a database within a master data exchange (which is not a communications scheduling device) to database within a backup data exchange (which is not a communications scheduling device).

Simply put, Pentikäinen does not disclose or suggest sending the same or similar data as the recited link active schedule between a master device and a backup device because the subscriber data sent in the Pentikäinen system is not a bus communication schedule or any other type of data that is used by the master and the backup data exchanges to control the timing and nature of the communications within the telecommunications system. Instead, the subscriber data of Pentikäinen merely identifies certain privileges or information (such as billing addresses) associated with customers who use the telecommunications system. This subscriber data is in no way related to the control of the timing of the actual communications which occur within the Pentikäinen telecommunications system.

Additionally, Pentikäinen does not disclose or suggest sending data of any type between devices that are similar to the recited master and backup LAS devices, or between

two devices that perform the same function as the recited master and backup LAS devices. In particular, while the recited master and backup LAS devices operate to control communications on the bus (on which process control signals are being sent) by controlling when each process control device attached to the bus can communicate on the bus, the master and backup exchanges of Pentikäinen are not involved in and are not responsible for controlling when different devices connected to the telecommunications system can communicate within that system. Instead, these exchanges presumably perform the standard and well known function of switching signals between different communication lines within a telephone network to thereby route signals properly within the telecommunications system.[1] Routing signals is not the same function as controlling the timing and nature of communications on a bus.

Still further, the Pentikäinen system does not appear to send the subscriber data between the master exchange and the backup exchange in the manner recited by the pending claims. In particular, while the claims recite sending the link active schedule from the master LAS device to a backup LAS device automatically as a result of the receipt of that data at the master LAS device, the Pentikäinen system appears to send the subscriber data between the master exchange and the backup exchange on a periodic basis.[2] The periodic method is different than the recited method, as the Pentikäinen method can result in the subscriber data in the master and backup devices being different for a significant amount of time, depending on how long of a time delay exists between the time when the subscriber data is changed in or received at the master exchange and the time when the next periodic backup communication

[1] In fact, it is not clear that the communication link between the master exchange and the backup exchange of Pentikäinen is a bus at all, as it appears that only the master and the backup exchanges are connected to this communication link, which makes the communication link a direct and dedicated communication line, not a bus.
[2] At the very least, it is unspecified how the Pentikäinen system decides when to send the subscriber data between the master data exchange and the backup data exchange.

procedure is scheduled. While this delay of data backup may not be significant in the Pentikäinen system (as the data being backed up is not critical to all of the communications occurring within the telecommunication system), this delay can be significant in the recited system and method because this delay may cause the master and backup LAS devices to have a different link active schedule for a some period of time after the link active schedule within the master LAS is changed, which means that the proper redundant operation of the backup LAS device is not assured. This situation can lead to a catastrophic failure of the process control system. Still further, the timed backup of the Pentikäinen system means that the data within the master exchange is periodically sent to the backup exchange even if this data has not changed, which increases the communication traffic within the Pentikäinen system. The recited method, however, only requires sending the link active schedule between the master and backup LAS devices once per change and only requires the data to be sent when a change in the link active schedule actually occurs. While excess communications are probably not a problem within the Pentikäinen telecommunications system which has a large amount of bandwidth, these excess communications are undesirable in process control system communications where communication bandwidth is limited.

Thus, combining the Pentikäinen system with the AAPA or the Burns systems would not produce the claimed system or method because none of the AAPA, the Burns or the Pentikäinen systems sends the recited data (bus communication timing and control data) between the recited devices (two devices which control the timing and nature of communications on the bus over which the bus timing schedule is sent) in the recited manner (automatically upon receipt of the new data at the master bus control device). Certainly none of AAPA, Burns or Pentikäinen provides any motivation or suggestion for sending bus communication timing and control data (a link active schedule) between the two devices

which control the timing and nature of communications on the bus (a master and a backup LAS device) automatically upon receipt of the new data at the master bus control device, as is recited by each of the clams of Group I.. Instead, it is only the Applicant's disclosure which provides this disclosure.

It is well established that, to establish a *prima facie* case of obviousness, the prior art must provide a suggestion of or a motivation for making the combination relied on by the Examiner. See, *In re Oetiker*, 977 F.2d 1443, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992); *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. 1985). With respect to Pentikäinen in particular, Pentikäinen is not concerned with, and does not deal with backing up bus communication timing data of any type, much less performing backup activities between different communication scheduling devices disposed on a databus used for process control data flow. The Examiner's position that Pentikäinen's general disclosure of backing up data between two databases disposed in a telecommunications environment makes backing up data in the particular type of process control system environment recited by the pending claims obvious, amounts to a position that Pentikäinen destroys the patentability of backing up data in any possible manner in any communications system, no matter how complex the system may be, how different the data being backed up may be, or how different the use or purpose of the system is. This result clearly cannot be the case.

In any event, because none of AAPA, Burns or Pentikäinen discloses or suggests that it may be desirable or even possible to send bus communication timing and control data (a link active schedule) between two devices which control the timing and nature of communications on the bus (a master and a backup LAS device) automatically upon receipt of the new schedule at the master bus control device, it follows that no combination of this art can render any of the claims of Group I obvious.

Still further, Applicants submit that the Pentikäinen reference is nonanalogous art and therefore cannot properly be used to make the combination relied upon by the Examiner. It is clear that, to be analogous art, a "reference must either be in the field of applicant's endeavor or, if not, then reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992). While the Examiner has generally categorized the AAPA, Burns, and Pentikäinen references together as "arts of networked communication (e.g., communications in a process control network, communications in a data telecommunication system, etc.)," Applicants respectfully disagree with this generalization of the field of endeavor as its scope is much too broad, especially when considering the Pentikäinen reference in light of guidelines found in the MPEP §2141.01(a) (8^{th} edition, Revision 2, May 2004). In particular, the recited invention (as well as the AAPA and the Burns references) are directed to process control communications which occur on a dedicated bus over which multiple process control devices communicate process control data to one another in a very coordinated and scheduled manner to thereby perform control of a process. To the contrary, Pentikäinen is directed to the much different field of public telecommunications in which telephone users send voice data to one another and in which users connect to the system, disconnect from the system and send communications over the system in very unscheduled and uncoordinated manners.[3]

Still further, the Pentikäinen system is not reasonably pertinent to the recited invention because it is not one that "logically would have commended itself to an inventor's attention in considering his problem" *In re Clay*, 966 F.2d 656, 659, 23 U.S.P.Q.

[3] The Examiner has not even alleged that Pentikäinen falls in the same primary classification or category as the other cited art, such as Burns, nor does it, as noted by differences in both the US and international classifications of these references.

2d 1058, 1060-61 (Fed. Cir. 1992). In particular, the inventor of the recited invention was concerned with the problem of how to assure proper transfer of control between two communication scheduling devices (attached to the same bus within a process control system in which the communication scheduling devices precisely control the timing and nature of communications on the bus) when the communication schedule needs to be changed. The inventor would not have been logically commended to the art of telecommunications and, more particularly, to Pentikäinen, in which the master and backup exchanges do not control the timing and nature of communications on a bus and do not use a communication schedule to perform control of communications on a bus. Moreover, the art of telecommunications and, in particular Pentikäinen, does not experience the problems created by using a communication scheduling device to control communications on a dedicated bus because this art does not use a bus communication scheduling device. As a result, the inventor would not have looked to or been commanded to Pentikäinen to solve his problem.

For the forgoing reasons, Pentikäinen is not analogous art. As a result, the combination made by the Examiner in rejecting each of the claims of Group I is improper and the Examiner's rejection should be reversed. Still further, even if the Pentikäinen reference were to be considered analogous prior art, for the reasons discussed above, the Examiner has failed to establish a *prima facie* case of obviousness. As a result, the rejections of the claims of Group I should be reversed.

B. The Claims of Group II Are Patentable Over Either of AAPA or Burns in Combination with Both of Pentikäinen and Chrabaszcz

Group II includes Claims 2, 11, 12, and 20, none of which are independent claims. However, each of the claims of Group II is patentable for the reasons discussed above with

respect to Group I, as each of the claims of Group II depends directly or indirectly from at least one of the claims of Group I.

Additionally, each of the claims of Group II further recites storing a list of backup link active scheduler devices in the master link active scheduler and, in the case of claim 20, of automatically sending the list of backup link active scheduler devices to the backup link active scheduler. None of the AAPA, Burns, Pentikäinen, or Chrabaszcz references discloses either of these features.

In particular, none of AAPA, Burns or Pentikäinen discloses or suggests that it is desirable or even possible to store a list of backup link active scheduler devices in a master LAS or to automatically send such a list of backup link active scheduler devices to a backup LAS device as part of a process of sending a link active schedule to the backup LAS. In fact, the Examiner has not even contended that such a disclosure or suggestion exists in any of AAPA, Burns or Pentikäinen.

Contrary to the Examiner's contention, however, Chrabaszcz also fails to disclose or suggest storing a list of backup link active scheduler devices associated with a databus in a master link active scheduler or of sending such a list to one of the backup LAS devices. While Chrabaszcz appears to generally disclose storing a list of circuit boards attached to a PCI bus, the Examiner has not provided any explanation as to how these circuit boards act as backup link active scheduler devices, nor has the Examiner even alleged that this list is stored in a master link active scheduler device, as required by the claims of Group II. In fact, Chrabaszcz does not appear to disclose the use of link active schedulers for a bus, and thus the list stored by the Chrabaszcz system cannot be a list of backup link active schedulers, nor can this list be stored in a master link active scheduler device, as is recited by the claims of Group II. Furthermore, Chrabaszcz's disclosure of storing a list of all of the circuit boards

attached to a PCI bus in no way provides a motivation for storing a list of a specific subset of devices (in this case, backup link active scheduler devices) attached to a bus, as recited by the claims of Group II, much less of storing such a list in a master link active scheduler device.

Still further, Chrabaszcz does not disclose sending a list of backup link active scheduler devices from one communication scheduling device to another communication scheduling device, as required by claim 20, nor has the Examiner even attempted to point to such a disclosure in Chrabaszcz. In fact, the Examiner has failed to even allege that the list of circuit boards disclosed in the Chrabaszcz reference (the list that the Examiner apparently contends is the list of backup link active scheduler devices) is sent to any of the circuit boards attached to the PCI bus (the devices that the Examiner apparently contends are the backup link active schedulers).

Because none of AAPA, Burns, Pentikäinen, or Chrabaszcz discloses or suggests storing a list of backup link active scheduler devices in a master link active scheduler device or of automatically sending a list of backup link active scheduler devices to a backup link active scheduler, the Examiner has failed to establish a *prima facie* case of obviousness with respect to the claims of Group II. As a result, the rejections of the claims of Group II should be reversed.

C. The Claims of Group III Are Patentable Over Any Combination of the AAPA, Pentikäinen, Burns, and Shapiro References

Group III includes claims 3, 4, 13, and 21-24, none of which are independent claims. However, each of the claims of Group III is patentable for the reasons discussed above with respect to Group I, as each of the claims of Group III depends directly or indirectly from at least one of the claims of Group I.

Additionally, each of the claims of Group III further recites one or both of (1) detecting when the backup link active scheduler is unavailable for storage of the link active

schedule or detecting a failure to store the link active schedule in a backup link active scheduler device when this schedule is sent from a master link active scheduler device and (2) notifying a user of the detected problem with the storage of the link active schedule in the backup link active scheduler device.

None of AAPA, Pentikäinen or Burns discloses or suggests detecting when a backup link active scheduler is unavailable for storage of a link active schedule or the failure to store a link active schedule in a backup link active scheduler device when this schedule is sent from a master link active scheduler device, because, as noted previously, none of these references discloses or suggests using a master link active scheduler device to send a link active schedule to a backup link active scheduler device. For this same reason, none of these references can disclose or suggest that it may be desirable to notify a user of a failure to store the link active schedule in the backup link active scheduler device when this link active schedule is sent from the master link active scheduler device.

Contrary to the Examiner's contention, Shapiro fails to provide the missing disclosure or motivation. Shapiro generally discloses a computer network having a routine that notifies a user upon the failure of one of the computers in the network to reboot properly. Applicants submit that the disclosure of a general computer rebooting failure does not amount to a disclosure of detecting when a communication scheduling device on a bus is unable to or fails to store a communication schedule sent to that device or of notifying a user of this condition. In fact, the Examiner does not even explain how the general computers of the Shapiro system operate as or perform a function similar to the recited backup bus scheduling devices, nor do they. Furthermore, the Examiner does not explain how the general notification of a failure of a computer to reboot properly provides a motivation or suggestion for notifying a user when a backup link active scheduler device fails to store or cannot store a link active schedule.

Instead, the Examiner's apparent contention is that the disclosure of detecting a rebooting failure and notifying a user of this failure provides the necessary disclosure or suggestion of detecting any other type of failure in a computer network and notifying a user of that failure. Applicants submit that the Examiner's contention is overbroad and improper.

Because none AAPA, Pentikäinen, Burns or Shapiro discloses or suggests detecting when a backup link active scheduler is unavailable for storage of a link active schedule or of detecting a failure to store a link active schedule in a backup link active scheduler device when such a schedule is sent to the backup link active scheduler device from a master link active scheduler device, or of notifying a user of the detected problem with the storage of the link active schedule in the backup link active scheduler device, the Examiner has failed to establish a *prima facie* case of obviousness with respect to the claims of Group III. As a result, the rejections of the claims of Group III should be reversed.

IX. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the Examiner has improperly rejected each of claims 1-26, and these rejections should be reversed.

Respectfully submitted,

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APPENDIX A

Claims

Claim 1 (Previously Amended) A method of providing a backup link active schedule for use in controlling communication in a process control system having a master link active scheduler that controls communication on a databus using a link active schedule and a backup link active scheduler that performs backup control of communication on the databus communicatively coupled directly together via the databus, and further including a controller communicatively connected to the databus, comprising the steps of:

providing process control signals to the databus from the controller to perform process control activities;

storing a link active schedule in a master link active scheduler wherein the link active schedule includes a communication timing schedule for the databus;

automatically transmitting the link active schedule from the master link active scheduler over the databus to the backup link active scheduler upon receipt of the link active schedule in the master link active scheduler apart from the process control signals; and

storing the link active schedule in the backup link active scheduler.

Claim 2 (Original) The method of claim 1, further comprising the step of storing a list of backup link active scheduler devices associated with the databus in the master link active scheduler.

Claim 3 (Original) The method of claim 1, further comprising the steps of detecting when the backup link active scheduler is unavailable for storage of the link active schedule and notifying a user that the backup link active scheduler is unavailable for storage of the link active schedule.

Claim 4 (Original) The method of claim 1, further comprising the steps of detecting a failure to store the link active schedule in at least one backup link active scheduler and notifying a user of the detected failure to store the link active schedule in at least one backup link active scheduler.

Claim 5 (Original) The method of claim 1, wherein the step of automatically transmitting includes the step of transmitting using an open communication protocol.

Claim 6 (Original) The method of claim 1, wherein the step of automatically transmitting includes the step of transmitting using a Fieldbus communication protocol.

Claim 7 (Original) The method of claim 1, further comprising the step of recognizing that the backup link active scheduler is no longer communicating on the databus.

Claim 8 (Original) The method of claim 7, wherein the step of recognizing includes the step of comparing a live list to a backup list.

Claim 9 (Original) The method of claim 7, further comprising the step of notifying a user that the backup link active scheduler is no longer communicating on the databus.

Claim 10 (Previously Amended) A system for controlling communications on a databus using a link active schedule having a communication timing schedule for the databus, and further including a controller communicatively connected to the databus, comprising:

the controller providing process control signals to the databus to perform process control activities;

a master link active scheduler that controls communication on the databus using a link active schedule, the master link active scheduler having a memory that stores the link active schedule and a processor programmed to automatically transmit the link active schedule over the databus upon receiving the link active schedule; and

a backup link active scheduler that performs backup communication control on the databus, the backup link active scheduler in communication via the databus with the master link active scheduler to receive the link active schedule transmitted from the master link active scheduler.

Claim 11 (Original) The system of claim 10, further comprising a list of backup link active scheduler devices stored in the memory.

Claim 12 (Original) The system of claim 11, wherein the processor is further programmed to send the link active schedule to the backup link active scheduler devices in the list of backup link active scheduler devices.

Claim 13 (Original) The system of claim 10, wherein the processor is further programmed to detect when the backup link active scheduler is unavailable for storage of the link active schedule and to notify a user that the backup link active scheduler is unavailable for storage of the link active schedule.

Claim 14 (Original) The system of claim 10, wherein the master link active scheduler and the backup link active scheduler are each adapted to transmit over the databus using an open protocol.

Claim 15 (Original) The system of claim 14, wherein the open protocol is the Fieldbus protocol.

Claim 16 (Original) The system of claim 10, wherein the backup link active scheduler is a field device.

Claim 17 (Previously Amended) A system for controlling a process, comprising:

a user interface coupled to a first databus;

a controller communicatively coupled to the user interface through the first databus;

an I/O device coupled to the controller and further coupled to a second databus, the controller providing process control signals to the second databus to perform process control activities;

a plurality of field devices coupled to the second databus, each of the field devices adapted to communicate with the I/O device over the second databus;

a primary scheduler coupled to the second databus and adapted to use a link active schedule to control interoperation of the field devices;

a backup scheduler coupled to the second databus and adapted to communicate with the primary scheduler and the plurality of field devices via the second databus to perform backup control of the interoperation of the field devices; and

a processor associated with the primary scheduler and programmed to automatically store a backup copy of the link active schedule in the backup scheduler upon receiving the link active schedule.

Claim 18 (Original) The system of claim 17, wherein the second databus uses a Fieldbus communication protocol.

Claim 19 (Previously Amended) A communication scheduling system for use in a process control system having a master link active scheduler with a processor therein and a backup link active scheduler communicatively coupled to a databus, the master link active scheduler performing control of communications on the databus and the backup link active scheduler performing backup control of communications on the databus, and further including a controller communicatively coupled to the databus to send control signals via the databus, comprising:

a computer readable memory;

a first storing routine stored on the memory and adapted to be executed by the processor that stores a link active schedule having a communication timing schedule in the master link active scheduler; and

an automatic transmission routine stored on the memory and adapted to be executed by the processor that automatically transmits the received link active schedule from the master link active scheduler apart from said control signals over the databus to the backup link active scheduler upon receipt of the link active schedule in the master link active scheduler.

Claim 20 (Previously Amended) The communication scheduling system of claim 19, wherein the automatic transmission routine is further adapted to receive and store a list of backup link active scheduler devices and to automatically send the list of backup link active scheduler devices to the backup link active scheduler.

Claim 21 (Original) The communication scheduling system of claim 19, further comprising a detecting routine stored on the memory and adapted to be executed by the processor that detects when the backup link active scheduler is unavailable for storage of the link active schedule.

Claim 22 (Original) The communication scheduling system of claim 21, further comprising a notifying routine stored on the memory and adapted to be executed by the processor that notifies a user when the backup link active scheduler is unavailable for storage of the link active schedule.

Claim 23 (Original) The communication scheduling system of claim 19, further comprising a detecting routine stored on the memory and adapted to be executed by the processor that detects a failure to store the link active schedule in the backup link active scheduler.

Claim 24 (Original) The communication scheduling system of claim 23, further comprising a notifying routine stored on the memory and adapted to be executed by the processor that notifies a user of the failure to store the link active schedule in the backup link active scheduler.

Claim 25 (Original) The communication scheduling system of claim 19, further comprising a detecting routine stored on the memory and adapted to be executed by the processor that detects when the backup link active scheduler is no longer communicating on the databus.

Claim 26 (Original) The communication scheduling system of claim 25, further comprising a notifying routine stored on the memory and adapted to be executed by the processor that notifies a user that the backup link active scheduler is no longer communicating on the databus.